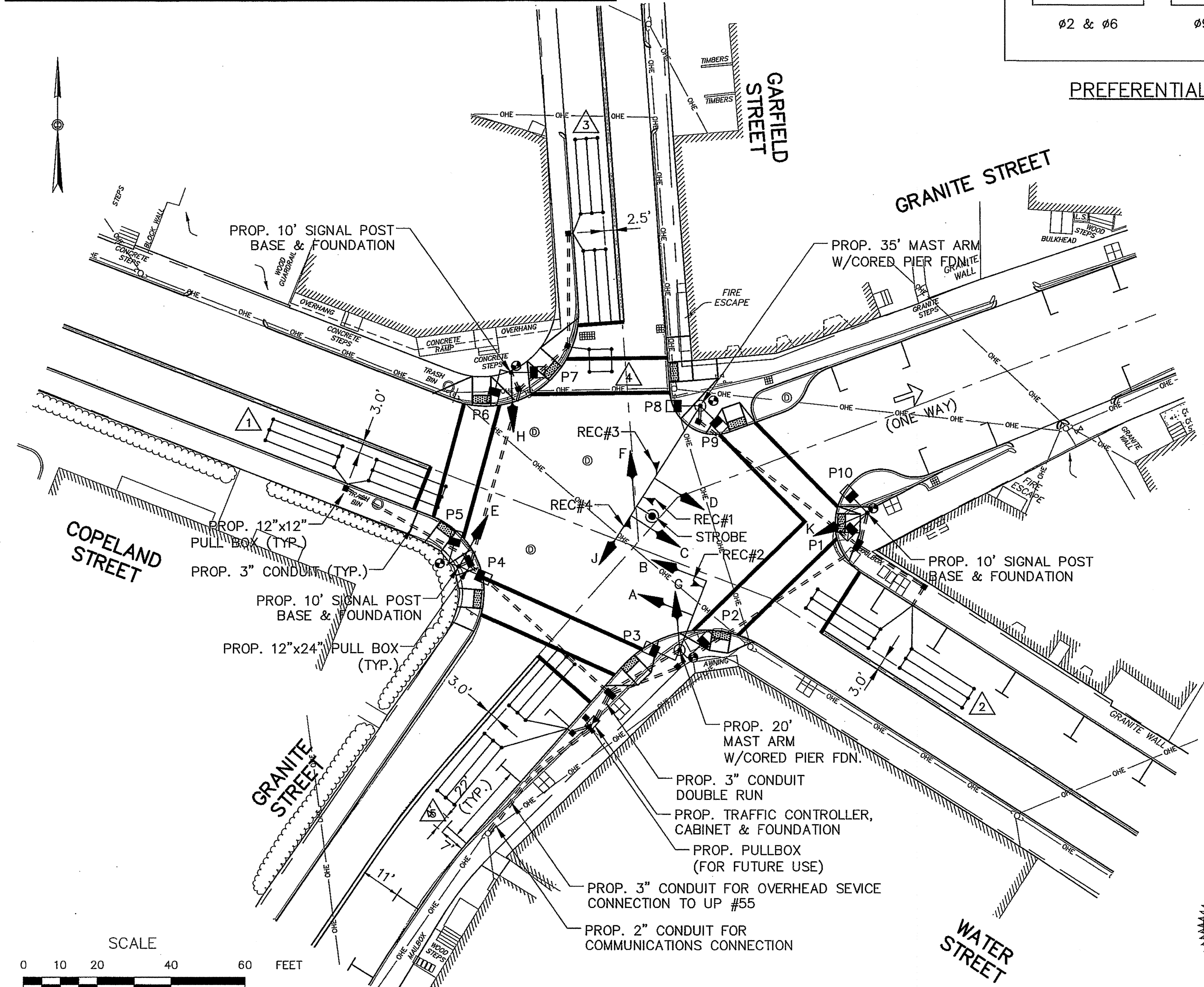
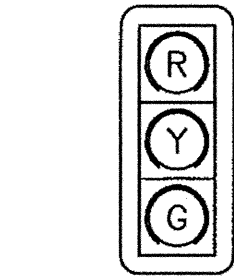


ITEM 816.01 LIST OF MAJOR ITEMS REQUIRED	
QUANTITY	DESCRIPTION
1	TRAFFIC SIGNAL CONTROLLER NEMA TS2-TYPE 2 (EAGLE EPAC 300 SERIES MODEL 3608 M52 WITH INTERNAL MODEM & CLOSED LOOP INTERFACE), LOCATED IN BASE MOUNTED TS2-TYPE 1 CABINET ASSEMBLY W/ FOUNDATION (CABINET EXTERIOR - BLACK)
1	SERVICE CONNECTION (OVERHEAD)
1	TELEPHONE CONNECTION (OVERHEAD)
10	SIGNAL HEAD, 3 SECTION, 12" LED (ALUMINUM - BLACK)
10	LOUVERED BACKPLATES (SINGLE PIECE, ALUMINUM - BLACK)
3	10' SIGNAL POST, PEDESTAL BASE & FOUNDATION (SINGLE PIECE, ALUMINUM - BLACK)
10	PEDESTRIAN HOUSING GRAPHIC LED W/ COUNTDOWN TIMER (SINGLE SECTION)
5	PEDESTRIAN PUSH BUTTON, SIGN & SADDLE
1	35" MAST ARM (STEEL), TYPE II MONOLEVER W/ FOUNDATION (BLACK)
1	20" MAST ARM (STEEL), TYPE II MONOLEVER W/ FOUNDATION (BLACK)
9	ROADWAY LOOP DETECTOR - 8 QUADRUPOLE TYPE, 1 SINGLE SEGMENT
5	DUAL CHANNEL LOOP DETECTOR AMPLIFIERS - RACK MOUNT (2 SPARES)
9	PULL BOX, 12" X 12" (SD2-031)
3	PULL BOX, 12" X 24"
4	OPTICOM - OPTICAL DETECTOR, UNIDIRECTIONAL, SINGLE CHANNEL (700 SERIES)
2	OPTICOM - 2 CHANNEL PHASE SELECTOR, RACK MOUNT (700 SERIES)
1	CONFIRMATION STROBE (CLEAR)
1	GPS RECEIVER & ANTENNA (TIME CLOCK)
1	MODEM (EXTERNAL)
PLUS ALL MISCELLANEOUS EQUIPMENT, LABOR AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.	

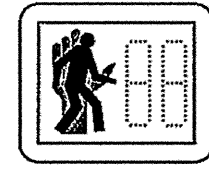
LOOP DETECTOR DATA							
DETECTOR GROUP NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	CALL DELAY (SECONDS)	CALL PHASE	SWITCH & EXTEND	LOOP CONNECTION
1	2 - 6' X 20'	2-4-2	PRESENCE	0	Ø6	-	PARALLEL
2	2 - 6' X 20'	2-4-2	PRESENCE	0	Ø2	-	PARALLEL
3	2 - 6' X 20'	2-4-2	PRESENCE	0	Ø4	-	PARALLEL
4	1 - 6' X 6'	3	PRESENCE	0	Ø4	-	SERIES
5	2 - 6' X 20'	2-4-2	PRESENCE	0	Ø8	-	PARALLEL



EMERGENCY VEHICLE PREEMPTION		
DIRECTION	MOVEMENT	PHASE CALL
WATER ST. WB - REC #1		Ø2
COPELAND ST. EB - REC #2		Ø6
GARFIELD ST. SB - REC #3		Ø4
GRANITE ST. NB - REC #4		Ø8



LOCATION:  
A,B,C,D,E,F,G,H,J,K



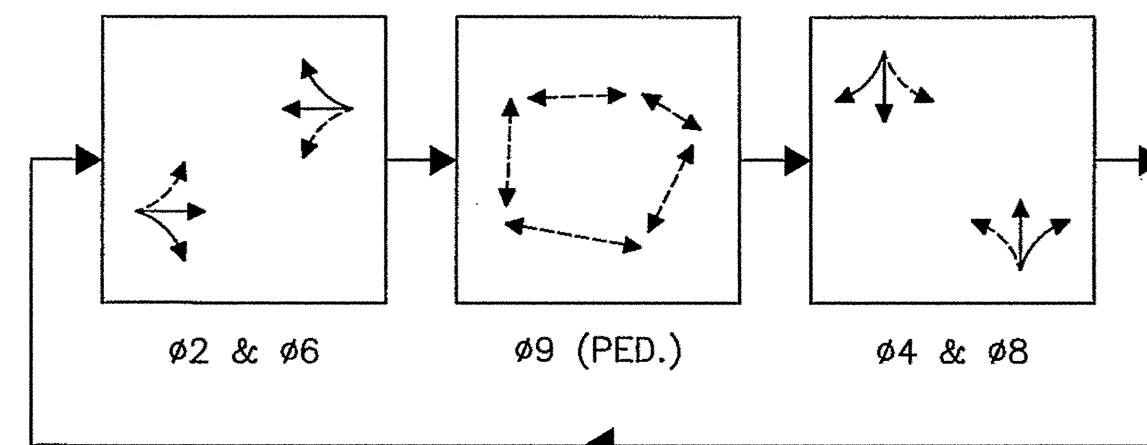
LOCATION:  
P1-P10

PROPOSED SIGNAL HEADS  
NOT TO SCALE

INSTRUCTIONAL SIGN MOUNT  
W/ PEDESTRIAN PUSHBUTTON  
NOT TO SCALE

#### SIGNAL HEAD NOTES

- ALL SIGNAL HEADS SHALL BE FIXED MOUNTED, HAVE TUNNEL VISORS AND 5" LOUVERED BACKPLATES.
- ALL VEHICLE SIGNAL LENSES SHALL BE 12" DIAMETER L.E.D.
- ALL PEDESTRIAN SIGNAL HEADS SHALL HAVE 16" LENSES, SHALL BE OF THE COUNTDOWN L.E.D. TYPE, SHALL DISPLAY INTERNATIONAL SYMBOLS (HAND)/(PERSON WALKING) AND SHALL HAVE TUNNEL VISORS. ONLY FULL SYMBOL DISPLAYS SHALL BE PERMITTED.



#### PREFERENTIAL SIGNAL PHASING

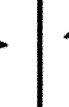



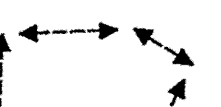
#### EMERGENCY VEHICLE PREEMPTION NOTES:

- EMERGENCY VEHICLE PREEMPTION SIGNAL SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS (RECEIVERS) LOCATED AT THE INTERSECTION.
- EMERGENCY PREEMPTION SHALL BE ON A FIRST COME, FIRST SERVE BASIS.
- IN RESPONSE TO A PRE-EMPTION CALL RECEIVED AT THE INTERSECTION BY AN OPTICAL RECEIVER, THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION THE CALLED PHASE GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL THE PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PREEMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION PHASES AS NECESSARY.
- MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TERMINATED BY PREEMPTION DEMAND.
- EMERGENCY PREEMPTION TIMING SHALL BE VARIABLE AND BE BASED ON THE DURATION OF FLASHING OPTICAL SIGNAL FROM APPROACHING EMERGENCY VEHICLE EMITTER.
- UPON TERMINATION OF THE EMERGENCY PREEMPTION MODE, THE SIGNALS SHALL RETURN TO NORMAL OPERATION AND SERVICE PREFERENTIAL PHASING IN SUCCESSIVE ORDER BASED ON DEMAND.
- UPON ACTUATION OF THE EMERGENCY PREEMPTION MODE, THE CONFIRMATION STROBE LIGHT SHALL BE ILLUMINATED.

#### TRAFFIC SIGNAL NOTES:

- IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.
- IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
- THE SIGNAL SHALL PROVIDE STOP AND GO OPERATION 24 HOURS A DAY. FLASHING OPERATION IS FOR EMERGENCY ONLY.
- THE CONTROLLER SHALL OPERATE IN THE STANDARD NEMA DUAL CONFIGURATION.
- ALL DETECTOR SETTINGS SHALL BE MADE IN THE CONTROLLER.
- Ø1, Ø3, Ø5, AND Ø7 ARE NOT USED.
- MAX 2 TO OPERATE 3:00 PM TO 7:00 PM MONDAY THROUGH FRIDAY AND 10:00 AM TO 3:00 PM ON SATURDAY. MAX 1 TIMING FOR ALL OTHER TIME PERIODS.
- EXCLUSIVE PEDESTRIAN PHASE TO BE ACTIVATED BY PEDESTRIAN PUSH BUTTON ONLY.
- DUAL ENTRY IN EFFECT/ON FOR Ø2 & Ø6 AND Ø4 & Ø8.
- EACH DETECTOR GROUP SHALL BE WIRED TO A SEPARATE AMPLIFIER CHANNEL.
- LOOP DETECTORS SHALL BE INSTALLED IN THE SURFACE COURSE.
- POST/POLE-MOUNTED SIGNALS SHALL BE MOUNTED TO PROVIDE A 4-FOOT MINIMUM CLEARANCE BETWEEN VERTICAL PROJECTION OF THE CURBLINE AND THE SIGNAL VISOR. WHEN FEASIBLE, INSTALL AT BACK OF SIDEWALK UNLESS OTHERWISE NOTED. PROVIDE SPECIAL MOUNTING HARDWARE AS REQUIRED.
- THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED 4"± BELOW FINISH GRADE. THE TOP OF THE FOUNDATION SHALL NOT BE EXPOSED IN THE SIDEWALK.
- ALL TRAFFIC CONTROL SIGNAL EQUIPMENT TO BE USED ON THIS PROJECT SHALL BE LISTED ON THE CURRENT MASSDOT "APPROVED EQUIPMENT LIST" AND IS SUBJECT TO THE APPROVAL OF THE DESIGN ENGINEER AND/OR THE CITY OF QUINCY.
- ALL OVERHEAD CONDUCTORS FOR SIGNAL HOUSINGS SHALL BE STRANDED WIRE.
- ALL NEW TRAFFIC CONTROLLER CABINETS SHALL BE EQUIPPED WITH A LEVER-TYPE METER BY-PASS. SPECIFICATIONS FOR THE BY-PASS MUST BE APPROVED BY THE APPROPRIATE UTILITY COMPANY.
- WHERE CALLED FOR ON THE PLANS, THE PROPOSED LOCATIONS OF THE OPTICAL DETECTORS AND CONFIRMATION STROBE ARE PERCEIVED BEST BUT NOT FINAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE OPTIMUM PLACEMENT IN COOPERATION WITH THE LOCAL MUNICIPALITY'S FIRE DEPARTMENT. THE OPTICAL DETECTORS SHALL HAVE AN UNOBSTRUCTED LINE-OF-SIGHT VIEW ALONG THE ROUTE OF APPROACHING EMERGENCY VEHICLE(S).
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND VERIFYING THAT THERE IS SUFFICIENT CLEARANCE BETWEEN ALL PROPOSED MAST ARM POLES AND EXISTING OR RELOCATED OVERHEAD UTILITY LINES. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR COORDINATING WITH THE AFFECTED UTILITY COMPANIES RELATIVE TO THE SCOPE OF ANY REQUIRED RELOCATIONS. THIS SHALL BE PERFORMED WITHIN TEN DAYS AFTER AWARD OF THE CONTRACT. THE COST FOR RELOCATION OF UTILITIES SHALL BE BORNE BY THE OWNER.

#### SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (ISOLATED)

STREET		DIRECTION	HOUSINGS	#2			#4			#6			#8			#9			FLASH OPER.
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
COPELAND STREET		EB	A,B	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FY
WATER STREET		WB	C,D	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
GARFIELD STREET		SB	E,F,G	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FR
GRANITE STREET		NB	H,I,K	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
PEDESTRIAN		ALL	P1-10	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OUT
TIMING (IN SECONDS)																			EMERGENCY ONLY
MINIMUM GREEN				6			6			6			6						
PASSAGE TIME				2.5			2			2.5			2						
MAXIMUM 1				30			25			30			25						
MAXIMUM 2				35			20			35			20						
YELLOW CLEARANCE					4			4			4			4					
RED CLEARANCE						2			1			2			1				
WALK INTERVAL																7			
PEDESTRIAN CLEARANCE																	10	1	
RECALL MEMORY				SOFT NON-LOCKING			OFF NON-LOCKING			SOFT NON-LOCKING			OFF NON-LOCKING			OFF LOCKING			
																			

ISSUED FOR BID

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WOODWARD & CURRAN

#### TRAFFIC SIGNAL PLAN

CITY OF QUINCY, MASSACHUSETTS  
1305 HANCOCK ST, QUINCY, MA

BREWERS CORNER AND VICINITY  
PEDESTRIAN ACCESS &  
TRAFFIC CONTROL IMPROVEMENTS

JOB NO.: 223580.00  
DATE: October 8, 2010  
SCALE:  
SHEET: 15 OF 17

T-300